RCPC **440**; and a receiver provided with a buffer **450** for storing the received packet, for sending an ARQ and a packet number to the transmitter via a channel. In FIG. **4**, an RCPC logic is fixed at a rate of ¼. A portion comprised of four arbitrary polynomials which satisfies a locally invertible characteristic simultaneously produces RCPC-processed packets A, B, C and D. Also, the transmitter has a maximum of four retransmissions. Here, the local inversion in the RCPC denotes that original information I can be obtained with any one of the packets A and B and with a combination of the packets A and B.

FIG. **5** is a conceptual view showing a procedure for processing the received packets A, B, C and D in the decoder of the receiver shown in FIG. **4**, wherein * indicates self-decoding and a bracket indicates a combination of packets (generally, an interleaving operation).

FIG. **6** is a flow chart outlining a procedure for processing the received packets in a decoder according to the present invention.

As shown in FIG. **6**, the transmitter produces packets A, B, C and D using the RCPC **420** in step **612**. The first packet A is transmitted to the receiver in step **614**. The decoder attempts decoding the packet A in step **616**. In step **616**, if the packet A is decoded, the decoded results are stored in the buffer **450** (step **642**) and the job for other information (e.g., information J) proceeds (step **644**); otherwise, an ARQ signal is sent to the transmitter to request transmission of the packet B (step **618**). The decoder attempts decoding only the packet B in step **620**. If successful, the decoded results are stored in the buffer **450** in step **642** and the job for other information (e.g., information J) proceeds in step **644**. If the decoder fails, it then attempts to decode the combination of the packets A and B in step **622**, which is indicated by *AB in FIG. **5**. At this time, if the combination of the packets A and B as shown in FIG. **5** are decoded, the decoded results are stored in the buffer **450** (step **642**) and the job for other information (e.g., information J) proceeds (step **644**). If the combination of the packets A and B is not decoded, the transmitter is requested to transmit the packet C by sending the ARQ signal thereto in step **624**. The decoder then attempts decoding only packet C in step **626**. If successful, the decoded results are stored in the buffer **450** in step **642** and the job for other information (e.g., information J) proceeds in step **644**. Otherwise, the decoder attempts to decode the combination of the packets B and C in step **628**, which is indicated by *BC in FIG. **5**. If the combination of the packets B and C is successfully decoded, the decoded results are stored in the buffer **450** (step **642**) and the job for other information (e.g., information a) proceeds (step **644**). If the combination thereof is not decoded, the combination of packets B and C is combined with packet A as shown in FIG. **5** as *ABC and decoding is attempted in step **630**. Here, if the combination of packets A, B and C is decoded, the decoded results are stored in the buffer **450** (step **642**) and the job for other information (e.g., information J) proceeds (step **644**). Otherwise, the transmitter is requested to transmit the packet D by sending the ARQ signal thereto in step **632**. The decoder then attempts decoding only the packet D in step **634**. If successful, the decoded results are stored in the buffer **450** in step **642** and the job for other information (e.g., information J) proceeds in step **644**. Otherwise, the decoder attempts to decode the combination of packets C and D in step **636**, which is indicated by *CD in FIG. S. If the combination of packets C and D is decoded, the receiver stores the decoded results in the buffer **450** (step **642**) and performs the job for other information (e.g., information J) (step **644**). Otherwise, the receiver combines packets C and D with packet B as indicated by *BCD in FIG. **5** and attempts decoding the combination in step **638**. Here, if the combination of packets B, C and D is decoded, the decoded results are stored in the buffer **450** (step **642**) and the job for other information (e.g., information J) proceeds (step **644**). otherwise, the receiver combines packets B, C and D with packet A as indicated by *ABCD in FIG. **5** and attempts decoding combination in step **640**. If the combination of packets A, B, C and D is decoded, the receiver stores the decoded results in the buffer **450** (step **642**) and performs the job for other information (e.g., information J) (step **644**). Otherwise, the process returns to step **614** to repeat all of these procedures until no errors occur. Meanwhile, the receiver stores the decoded results in the buffer **450** in step **642** and performs the job for the next information (e.g., information J, K, . . .) in step **644**.

As described above, the present invention has the characteristics of both Type-1 and Type-2 ARQ methods; therefore, one can obtain constant channel throughput in the burst error containing channel, the random error containing channel, and a channel where the two error patterns coexist simultaneously. In the burst error containing channel, the method of the present invention is performed nearly the same as or better than the Type-1 method and much better than the Type-2 method. As for the random error containing channel, since the method of the present invention is performed similar to the Type-2 method, it also performs almost the same as the Type-2 method, but much better than the Type-1 method.

What is claimed is:

1. A method of protecting errors from occurring during decoding of a plurality of packets of given information, comprising the steps of:

a) decoding one of said plurality of packets;

b) decoding another packet when an error occurs during said decoding in said step a);

c) decoding a combination of said packets of said steps a) and b) or a third packet when an error occurs during said decoding in said step b); and

d) repeating said step c) until no decoding error occurs.

2. An error protecting method as claimed in claim 1, further comprising the step of, storing the decoded results and standing by decoding of a plurality of packets of next information when no decoding error occurs during said steps a) to d).

3. An error protecting method as claimed in claim 1, wherein, at least two decoding error packets are combined and decoded when the number of said packets in said step c) is at least three.

4. An error protection method as claimed in claim 3, wherein decoding is sequentially performed starting from when the number of combined packets is two and including a latest packet determined to have a decoding error.

5. A method of protecting from an error occurring during the decoding of a plurality of packets of given information, comprising:

a) decoding a first packet which is one of the plurality of packets; and

b) combining the first packet with two or more other packets of the plurality of packets when an error occurs in the decoding in a), wherein said two or more other packets are packets which had an error occur during decoding thereof.

6. A method of protecting from an error occurring during the decoding of a plurality of packets of given information, comprising:

a) decoding a first packet which is one of the plurality of packets;

b) combining the first packet with a second packet when an error occurs in the decoding in a), wherein said second packet is one of the plurality of packets and is a packet which had an error occur during decoding thereof;

c) combining the first packet with a combination of the second packet and at least a third packet and decoding the packets combined in c), when an error occurs in the decoding in b), wherein said third packet is one of the plurality of packets and is a packet which had an error occur during decoding thereof; and

d) repeating c) if an error occurs in the decoding of c).

7. An error protection method as claimed in claim **6**, further comprising storing one of the decoded results and standing by the stored decoded result when no decoding error occurs in any one of a) to c).

8. A method of protecting errors during decoding of a plurality of packets of given information, comprising:

a) decoding a first packet of said plurality of packets;

b) decoding a second packet of said plurality of packets when an error occurs during the decoding of said first packet;

c) decoding a combination of said first and second packets when an error occurs during decoding of the second packet; and

d) decoding a third packet of said plurality of packets when an error occurs during the decoding of said first and second packets, and when an error occurs in decoding said combination of said first and second packets.

9. An error protection method as claimed in claim **8**, further comprising:

e) decoding a combination of two or more of said first through third packets when an error occurs during the decoding in step d).

10. An error protection method as claimed in claim **9**, further comprising:

f) if an error occurs e), repeating step e) using a different combination of packets.

11. An error protection apparatus for protecting errors from occurring during decoding of a plurality of packets of given information, comprising:

a buffer coupled to a transmission channel and storing packets received from a transmitter;

a decoder unit which decodes one or more packets stored in the buffer,

wherein in response to generating an error upon decoding a combination of the packets, said decoder unit decodes a second combination of packets stored in said buffer, wherein said second combination of packets is different from said first combination of packets.

12. The error protection apparatus as claimed in claim **11**, wherein in response to said decoder unit generating a decoding error, said buffer transmits a signal to the transmitter causing the transmitter to transmit another of the plurality of packets.

13. An error protection apparatus for protecting errors from occurring during decoding of a plurality of packets of given information, comprising:

a buffer coupled to a transmission channel and storing packets received from a transmitter;

decoder means for decoding one or more packets stored in the buffer,

wherein in response to generating an error upon decoding a combination of the packets, said decoder means decodes a second combination of packets stored in said buffer, wherein said second combination of packets is different from said first combination of packets.

14. The error protection apparatus as claimed in claim **13**, wherein in response to said decoder means generating a decoding error, said buffer transmits a signal to the transmitter causing the transmitter to transmit another of the plurality of packets.

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